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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/530,982	10/11/2005	Yoshiaki Arata	49288.1000	9255

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SNELL & WILMER
400 EAST VAN BUREN
ONE ARIZONA CENTER
PHOENIX, AZ 85004-2202

EXAMINER	
AWAI, ALEXANDRA F	

ART UNIT	PAPER NUMBER
3663	

DATE MAILED: 10/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/530,982	ARATA, YOSHIAKI	
	Examiner	Art Unit	
	Alexandra Awai	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 April 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/11/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-10 have been examined.

Drawings

2. Color photographs and color drawings (Figs. 1 and 3-11) are not accepted unless a petition filed under 37 CFR 1.84(a)(2) is granted. Any such petition must be accompanied by the appropriate fee set forth in 37 CFR 1.17(h), three sets of color drawings or color photographs, as appropriate, and, unless already present, an amendment to include the following language as the first paragraph of the brief description of the drawings section of the specification:

> The patent or application file contains at least one drawing executed in color. Copies of this patent or patent application publication with color drawing(s) will be provided by the Office upon request and payment of the necessary fee.

Color photographs will be accepted if the conditions for accepting color drawings and black and white photographs have been satisfied. See 37 CFR 1.84(b)(2).

Specification

3. The incorporation of essential material in the specification by reference to an unpublished U.S. application, foreign application or patent, or to a publication is improper. Applicant is required to amend the disclosure to include the material incorporated by reference, if the material is relied upon to overcome any objection, rejection, or other requirement imposed by the Office. The amendment must be accompanied by a statement executed by the applicant, or a practitioner representing the applicant, stating that the material being inserted is the material previously incorporated by reference and that the amendment contains no new matter. 37 CFR 1.57(f).

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. The specification is objected to under 35 U.S.C. 112, first paragraph, because concepts and methods critical or essential to the practice of the invention are not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). Instead, the "conventional established theory" of solid-dissolving deuterium in metals (p. 3), the "phenomenon that elasticity emerges in the bond between atoms of the material" (p. 8) and methods of preparing the metal nano-ultrafine particle (p. 8) have been improperly incorporated by reference as set forth in section 3 of this Office action.

6. The specification is objected to under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The specification does not describe the subject matter of the invention in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. This is because certain concepts promulgated as facts in the specification are counter to the current understanding of quantum physics, but no explanation is given to resolve the conflicting issues. The primary issues in contention include how the deuterium atoms are brought within 0.6 A or less of one another simply by being in a relationship with metal atoms, and how the $^{2}D + {}^{2}D = {}^{4}He$ + lattice energy (23.8 MeV) reaction proceeds.

According to the current understanding, nuclei must overcome the Coulomb barrier in order to fuse, and once nuclei are brought within the interaction radius, the strong interaction forces fusion to occur. How is it that the mere presence of palladium atoms, for example,

supplies the several KeV of energy required to overcome the Coulomb repulsion (less a 300 Watt, 19 kHz ultrasonic wave applied for an indeterminate amount of time) between deuterons, or does it somehow reduce the Coulomb repulsion by several orders of magnitude? If so, how? Why is it that deuterium nuclei can be brought to distances within the interaction radius (i.e., range of the strong nuclear force), and yet remain un-fused pending application of some additional energy? Discussions regarding the host and guest of the condensate appear to be baseless speculation setting forth *what* Applicant believes, rather than a reasoned explanation of *why* this belief is justified. For instance, Applicant fails to explain how and why organic compounds can capture and adjust the guest material.

Applicant claims that in the preferred embodiment the energy-producing reaction that takes place is $^{2}D + {}^{2}D = {}^{4}He$ + lattice energy (23.8 MeV). However, it is not clear how Applicant avoids the well-known deuterium-deuterium (DD) nuclear fusion reactions that result in ionizing radiation. Indeed, what is well-known about those reactions is that with about 50% probability, DD fusion results in an energetic ^{3}He particle with a more energetic neutron, and the other half of the time, the result is an energetic tritium particle and a more energetic proton. It is only through a vanishingly small probability (i.e., approaching zero, thereby allowing the other reactions to account for 100% of the branching probability) that ^{4}He and the accompanying 23.8 MeV gamma ray are likely to result. There is no single DD nuclear fusion reaction that generates tritium and neutrons as suggested on p. 21 of the specification. Even if Applicant were able to affect these branching probabilities, there is no explanation for how the energetic gamma – an extremely penetrating type of radiation – is able to transfer its energy to the lattice. Applicant additionally states that the deuterium reaction generates high-pressure gas other than helium in

the reaction furnace, but neglects to indicate what elements compose this other high-pressure gas, or how it is generated.

It is well established that where, as here, the utility of the claimed invention is based upon allegations that border on the incredible or allegations that would not be readily accepted by a substantial portion of the scientific community, ***sufficient substantiating evidence*** of operability must be submitted by applicant. Note *In re Houghton*, 167 U.S.P.Q. 687 (CCPA 1970); *In re Ferens*, 163 U.S.P.Q. 609 (CCPA 1969); *Puharich v. Brenner*, 162 U.S.P.Q. 136 (CA DC 1969); *In re Pottier*, 152 U.S.P.Q. 407 (CCPA 1967); *In re Ruskin*, 148 U.S.P.Q. 221 (CCPA 1966); *In re Citron*, 139 U.S.P.Q. 516 (CCPA 1963); and *In re Novak*, 134 U.S.P.Q. 335 (CCPA 1962). Although it is axiomatic that an inventor need not comprehend the scientific principles on which the practical effectiveness of his invention rests, if the examiner comprehends that the inventor has submitted inaccurate or implausible information, the burden is on the applicant to show that the examiner is mistaken, and that the invention possesses practical effectiveness, and this showing requires evidence. Note that there are many factors recognized by the MPEP that are to be considered when determining whether there is sufficient evidence to support a determination that a disclosure satisfies the enablement requirement. See MPEP 2164.01(a).

As stated in MPEP § 2164.03, the amount of guidance or direction needed to enable the invention is inversely related to the amount of knowledge in the state of the art as well as the predictability in the art. *In re Fisher*, 427 F2d 833, 839, 166 USPQ 18, 24 (CCPA 1970). Other factors contributing to lack of enablement may include the breadth of the claims, the nature of the invention, the existence of working examples and the quantity of experimentation needed to make or use the invention based on the content of the disclosure (see MPEP § 264.01(a)). The art

of the present invention (i.e., a method of successfully generating heat via production of ^{4}He and "lattice energy" using a hydrogen condensate) is so new that it cannot be considered to have a body of knowledge associated with it, much less predictability of results (see *Chiron Corp. v. Genentech Inc., 363* F.3d 1247, 1254, 70 USPQ 2d 1321, 1326 (Fed. Cir. 2004)). Applicant asserts that the technology is new, but does not disclose essential details as discussed above. Since Applicant has not established the operability of the presently claimed invention, it is considered that the invention is lacking in utility.

It is thus considered that the examiner has set forth a reasonable and sufficient basis for challenging the adequacy of the disclosure. The statute requires the applicant itself to inform, not to direct others to find out for themselves; *In re Gardner et al.*, 166 U.S.P.Q. 138, *In re Scarbrough*, 182 U.S.P.Q. 298. Note that the disclosure must enable a person skilled in the art to practice the invention without having to design structure not shown to be readily available in the art; *In re Hirsch*, 131 U.S.P.Q. 198.

Claim Rejections - 35 USC § 112

7. Claims 1-10 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. Concepts and methods critical or essential to the practice of the invention, but not included in the claims are not enabled by the disclosure as set forth in sections 5 and 6 of this Office action. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976).

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is clear that a certain amount of energy is at least required for practicing the method, yet the claims are inclusive of the application of any conceivable level of energy. The claims therefore fail to particularly point and specifically claim the subject matter of the invention.

Claims 1, 3, 6, and 8 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are those involved in condensing the hydrogen isotope atoms and generating heat. The claims are additionally unclear because "an internuclear spacing of a molecule consisting of two hydrogen isotope atoms" has not been established in the claim, and may be variable depending on conditions such as temperature and the molecule's proximity to other molecules. Accordingly, the inter-atomic nuclear distance between the condensed hydrogen isotope atoms is indefinite. With regard to generating heat, the claims encompass both atomic and nuclear reactions, the former being the production of $^{x}H_2$ from ^{x}H and ^{x}H, which may not result in appreciable heat and is certainly not inventive. In the case of the latter, it is not clear that thermal energy will necessarily result from the reaction products as discussed in section 6 of this Office action.

Claim Rejections - 35 USC § 101

10. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

11. Claims 1-10 are rejected under 35 U.S.C. 101 because the disclosed invention is inoperative and therefore lacks utility, as set forth in section 6 of this Office Action.

12. Claims 1-10 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a credible asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

Claim Rejections - 35 USC § 102

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14. Claims 1-3 and 6-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Zaluska et al (Appl. Phys. 2000).

Zaluska et al. disclose hydrogen condensates comprising nano-crystalline metals (see p. 158), including nickel (Fig. 4), palladium (Fig. 5), iron and titanium (p. 160) and zirconium (Fig. 7). As evidenced by the graphs showing weight% of H absorption, a plurality of hydrogen isotope atoms are dissolved among the metal atoms. Given the unduly broad range of "smaller than or equal to an internuclear spacing of a molecule consisting of the two hydrogen isotope atoms," the disclosed hydrides anticipate this feature. Absorption and desorption of the metal hydrides proceed at relatively high temperatures – e.g., 280°C (Fig. 7), indicating the application of heat energy. If the claimed steps are enabling for causing the hydrogen isotope atoms to react

with each other, and if this reaction inevitably results in the generating of heat, then it is be inherent that the method disclosed by Zaluska – application of heat (energy) to the hydride for desorption – also generates heat. As to limitations which are considered to be inherent in a reference, note the case law of *In re Ludtke*, 169 USPQ 563, *In re Swinehart*, 168 USPQ 226, *In re Fitzgerald*, 205 USPQ 594, *In re Best et al.*, 189 USPQ, and *In re Brown*, 173 USPQ 685, 688.

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

16. Claims 4 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zaluska et al. and admissions by Applicant.

Claims 4 and 9 additionally recite a number of means that the generation of the energy may be "based on." However, Applicant provides no enabling details for employing the "ultrasonic wave, strong magnetic field, high pressure, laser, laser explosive flux-compression, high-density electron beam, high density-current, discharge, and chemical reaction" (specification, p. 4), which essentially encompass most known means of generating energy save nuclear fusion itself. This truncated disclosure is considered an implicit identification of the work of another. Applicant is not the inventor of the laser, magnetic field or chemical reaction, and skilled artisans routinely use these means for the application of energy. In fact, the electricity

used to power certain claimed means may be considered "based on" chemical reactions if it originates from coal-fired electricity plants. Note MPEP § 2129 [R-3], which states, "A statement by an applicant during prosecution identifying the work of another as prior art is an admission that that work is available as prior art against the claims." Those skilled in the art are well versed in the making and using of all of the claimed means, and so using any of these means therefore amounts to no more than the advantageous application of a known expedient.

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexandra Awai whose telephone number is (571) 272-3079. The examiner can normally be reached on 9:30-6:00 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AA
September 23, 2006

JACK KEITH
SUPERVISORY PATENT EXAMINER